

Art Unit: 1774

CLMPTO

EVH

02/02/05

Claims 1-25 are cancelled.

26. A method for recovering metal values from refractory sulfide ores comprised of metal sulfide particles, the process comprising the steps of

- a. separating fines from a crushed refractory sulfide ore;
- b. forming a heap with said refractory sulfide ore;
- c. bioleaching the ore in said heap to thereby oxidize the metal sulfide particles contained therein;
- d. hydrometallurgically treating the bioleached ore to recover metal values; and

Art Unit: 1774

f. treating the separated fines to recover metal values contained therein.

27. A method for recovering precious metal values from refractory sulfide ores comprised of metal sulfide particles having occluded precious metal values, the process comprising the steps of:

- a. separating fines from a crushed refractory sulfide ore;
- b. forming a heap with said refractory sulfide ore;
- c. bioleaching the ore in said heap to thereby oxidize the metal sulfide particles contained therein;
- d. hydrometallurgically treating the bioleached ore to recover precious metal values; and
- e. treating the separated fines to recover precious metal values contained therein.

28. A method according to claim 27, wherein said method of fines treatment comprises:

- a. separating precious metal containing metal sulfide particles from the fines;
- b. oxidizing said metal sulfide particles; and
- c. hydrometallurgically treating said oxidized metal sulfide particles to recover precious metal values contained therein.

Art Unit: 1774

29. A method according to claim 28, further comprising:

a. agglomerating the fines after separation of said metal sulfide particles; and

LAI-20032946

51

Art Unit: 1774

b. hydrometallurgically treating said agglomerated fines to recover precious metal values.

30. A method according to claim 27, wherein said method of fines treatment comprises:

a. separating precious metal containing metal sulfide particles from the fines; and

b. adding said metal sulfide particles to the heap.

31. A method according to claim 30, further comprising:

a. agglomerating the fines after separation of said metal sulfide particles; and

b. hydrometallurgically treating said agglomerated fines to recover precious metal values.

32. A method according to claim 27, wherein said method of fines treatment comprises:

a. separating precious metal containing metal sulfide particles from the fines;

b. hydrometallurgically treating said metal sulfide particles to recover nonrefractory precious metal values;

c. oxidizing said metal sulfide particles; and

d. hydrometallurgically treating said oxidized metal sulfide particles to recover additional precious metal values.

Art Unit: 1774

33. A method according to claim 32 further comprising:

- a. agglomerating the fines after separation of said metal sulfide particles; and
- b. hydrometallurgically treating said agglomerated fines to recover precious metal values.

34. A method according to claim 27, wherein said method of fines treatment comprises:

- a. separating precious metal containing metal sulfide particles from the fines;
- b. hydrometallurgically treating said metal sulfide particles to recover nonrefractory precious metal values; and
- c. adding the hydrometallurgically treated metal sulfide particles to the heap.

35. A method according to claim 34, further comprising:

- a. agglomerating the fines after separation of said metal sulfide particles; and
- b. hydrometallurgically treating said agglomerated fines to recover precious metal values.

36. A method according to claim 27, wherein said hydrometallurgical treatment comprises leaching said heap with a lixiviant selected from the group consisting of cyanide and thiourea.

37. A method according to claim 27, wherein said hydrometallurgical treatment comprises leaching said heap with cyanide.

38. A method according to claim 27, wherein said crushed  
[REDACTED]

Art Unit: 1774

refractory sulfide ore has a maximum particle size in the range of approximately 1/4 inch to 1 inch, and said fines have a maximum particle size of about -60 mesh to -1/8 inch.

39. A method according to claim 27, wherein the recovered precious metal is at least one metal selected from the group consisting of gold, silver, and platinum.

40. A method according to claim 27, wherein the recovered precious metal is gold.

41. A method according to claim 28, wherein said separated metal sulfide particles are oxidized by biooxidation.

42. A method according to claim 32, wherein said separated metal sulfide particles are oxidized by biooxidation.

43. A method according to claim 28, wherein said metal sulfide particles are separated from the fines by a method selected from the group consisting of gravity separation and flotation.

44. A method according to claim 32, wherein said metal sulfide particles are separated from the fines by a method selected from the group consisting of gravity separation and flotation.

45. A method according to claim 27, further comprising

DECLASS. AUTH. 2509490-2000000

treating the bioleached ore to inhibit pregrobbing by carbonaceous components contained therein.